

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference AX02A02 / P-WO	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/EP2004/006698	International filing date (day/month/year) 21/06/2004	(Earliest) Priority Date (day/month/year) 20/06/2003
Applicant AXIOGENESIS AG		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. Certain claims were found unsearchable (See Box II).

3. Unity of invention is lacking (see Box III).

4. With regard to the title,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the abstract,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

a. the figure of the drawings to be published with the abstract is Figure No. _____

as suggested by the applicant.

as selected by this Authority, because the applicant failed to suggest a figure.

as selected by this Authority, because this figure better characterizes the invention.

b. none of the figures is to be published with the abstract.

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International Application No
PCT/EP2004/006698

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N5/06 C12N5/10 A61K35/34 C12Q1/02 A61P9/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 03/010303 A (ES CELL INTL. PTE LTD; NETHERLANDS INSTITUUT VOOR ONTWIKKELINGSBIOGIE) 6 February 2003 (2003-02-06) examples	1-18, 40-42, 45-50, 62-75, 80,81
X	MUMMERY C ET AL: "Differentiation of human embryonic stem cells to cardiomyocytes: Role of coculture with visceral endoderm-like cells." CIRCULATION, vol. 107, no. 21, 3 June 2003 (2003-06-03), pages 2733-2740, XP008029536 ISSN: 0009-7322 (ISSN print) Published online 12 May 2003 the whole document	1-18, 40-42, 45-50, 62-75, 80,81
		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 January 2005	01/02/2005
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Teyssier, B

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International Application No PCT/EP2004/006698

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/051987 A (AXIOGENESIS AG) 4 July 2002 (2002-07-04) cited in the application the whole document -----	18-20, 45-75, 80,81
X	US 5 733 727 A (FIELD LOREN J) 31 March 1998 (1998-03-31) examples 4,5 -----	18-20, 43-75, 80,81
X	MUELLER M ET AL: "Selection of ventricular-like cardiomyocytes from ES cells in vitro" FASEB JOURNAL, vol. 14, no. 15, December 2000 (2000-12), pages 2540-2548, XP002180458 ISSN: 0892-6638 the whole document -----	18-20, 45-75, 80,81
X	SPIELMANN H ET AL: "The use of transgenic embryonic stem (ES) cells and molecular markers of differentiation for improving the embryonic stem cell test (EST)" CONGENITAL ANOMALIES, vol. 40, no. Suppl., December 2000 (2000-12), pages S8-S18, XP008029541 ISSN: 0914-3505 the whole document -----	45-49, 57-75, 80,81
X	KETTENHOFEN R ET AL: "Transgenic murine embryonic stem cells as an in-vitro model for developmental toxicity: An alternative to the gold standard" NAUNYN-SCHMIEDEBERG'S ARCHIVES OF PHARMACOLOGY, vol. 365, no. Supplement 1, March 2002 (2002-03), page R154, XP001189334 43rd Spring Meeting of the German Society for Experimental and Clinical Pharmacology and Toxicology; Mainz, Germany; 12-14 March 2002 ISSN: 0028-1298 Abstract 601 -----	45-49, 57-75, 80,81
A	SACHINIDIS A ET AL: "Cardiac specific differentiation of mouse embryonic stem cells." CARDIOVASCULAR RESEARCH, vol. 58, no. 2, 1 May 2003 (2003-05-01), pages 278-291, XP002313488 ISSN: 0008-6363 -----	
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INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	KOLOSSOV E ET AL: "Transplantation of the cardiomyocytes selected from transgenically designed ES cells: Quality control and engrafting support of fibroblasts." TISSUE ENGINEERING, vol. 9, no. 4, August 2003 (2003-08), pages 853-854, XP008029529 Second Meeting of the European Tissue Engineering Society; Genoa, Italy; 3-6 September 2003 ISSN: 1076-3279 (ISSN print) Abstract 230 -----	1-20, 45-75, 80,81

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Although claims 17-20 and 50-56 are directed to methods of treatment (Article 52(4) EPC), the search has been carried out and based on the alleged effects of the composition.

Continuation of Box II.2

Claims Nos.: 76-79

Present claims 76-79 relate to methods of manufacturing a drug where the drug is to be identified by the assay of claims 62-75. Neither support within the meaning of Article 6 PCT nor disclosure within the meaning of Article 5 PCT is provided for any individual drug. A meaningful search over the whole of the claimed scope is impossible, as such "reach-through" claims actually intend to cover an invention that has not yet been made. Consequently, no search has been carried out for claims 76-79 and those parts of claims 80 and 81 which refer to claims 76-79.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: 17-20, 50-56
because they relate to subject matter not required to be searched by this Authority, namely:
Although claims 17-20 and 50-56 are directed to methods of treatment (Article 52(4) EPC), the search has been carried out and based on the alleged effects of the composition.
2. Claims Nos.: 76-79
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2004/006698

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 03010303	A	06-02-2003	WO CA EP GB JP	03010303 A1 2452256 A1 1421182 A1 2394958 A 2004535820 T		06-02-2003 06-02-2003 26-05-2004 12-05-2004 02-12-2004
WO 02051987	A	04-07-2002	DE BR CA CN WO EP GB JP US	10136702 A1 0116549 A 2431197 A1 1483074 T 02051987 A1 1348019 A1 2386609 A ,B 2004520029 T 2004096432 A1		18-07-2002 23-12-2003 04-07-2002 17-03-2004 04-07-2002 01-10-2003 24-09-2003 08-07-2004 20-05-2004
US 5733727	A	31-03-1998	US US US US US US US AU AU AU AU CA EP JP JP WO	5602301 A 6399300 B1 RE37978 E1 2004265287 A1 2001038837 A1 2002061295 A1 6015671 A 688427 B2 1097695 A 697666 B2 5214198 A 2174860 A1 0729506 A1 9505471 T 2004344170 A 9514079 A1		11-02-1997 04-06-2002 04-02-2003 30-12-2004 08-11-2001 23-05-2002 18-01-2000 12-03-1998 06-06-1995 15-10-1998 19-03-1998 26-05-1995 04-09-1996 03-06-1997 09-12-2004 26-05-1995